

**The Radio Vision Electronic Network /Analog output / Viewing system.  
THE RAVEN/RVS.**

**BACKGROUND OF THE INVENTION**

Using two ,double sideband full carrier AM transmitters to produce AM stereo and one other transmitter either AM or nbFM –AM band to produce the slow scan video on the AM band 8 khz down from the main audio carrier and with the use of a dieplexer , an antenna tuner and also an antenna stacker earth grounded, there will be good separation the AM station's audio and video within a 15 khz bandwidth.

Single sideband suppress carrier will work will for the slow scan video also but like nbFM one would need special receivers for these two modulations but, I will claim these for the system also.

Using nbFM in the AM band will enable the VC-H1 to use the Fast FM mode, the fax like beep will be very faint over the AM receiver if tuned to the video frequency.

This system for slow scan video can be used for FM radio on the main carrier for simo-casting with another running audio, or the RDS 57 khz or the SCA 67 khz above the FM station's main carrier.

I also claim this system I know of no one eles doing this at this time.

FSTV could run SSTV over their SAP (Commercial Television ), I claim this also.

ATV some do run video on the AM carrier, audio on the FM-1 carrier, and SSTV on the FM-2 carrier, I make no claim to this.

This AM video system differs from Mr. Kahn AM audio/data system, he has the data is embedded in the audio SSTV will not mix with audio that is why there is a frequency difference in my system.

As with Kahn's AM stereo system two analog AM radio can be used to receive the stereo but incase of an analog AM radio with a digital tuner I have devolved a circuit that will receive any, AM broadcast station, at the receivers headphone jack using a pair of speakers containing a pair woofers and tweeters , **PSUDO AM STEREO**, mid-range head will not give the stereo effect, and I claim this also.

Furthermore an increase in the number of still life pictures can be had using Fast FM mode, a video transmitter in FM mode and ( see next page )

carrier is at 700 khz with a bandwidth of 10 khz (695 khz to 705 khz ) and my AM video carrier is at 692 khz with a bandwidth of 4 khz (690 khz to 694 khz ) ,a total of 15 khz wide allowable by the FCC for standard AM broadcast in the US.

The slow scan video can be in AM picture using Robot 36 mode or FM picture in the AM band using the Fast FM mode of the VC-H1 and a transmitter like the AM88 North Country Radio that can broadcast in AM or FM mode on the AM band.

In addition SSTV picture can be had on FM using the RDS at 57 khz above the FM station's main carrier or the SCA 67 khz carrier.

Because of modulation differences if desired and frequency differences (-8 khz ) there is no interference between the audio and video on the am service a dieplexer and an antenna tuner helped also.

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THE RAVEN/RVS FCC GRO License# PG-18-30683

#### US PATENT DOCUMENTS

2141973 DEC 1938 Finch

4057836 Nov 1977 Munsey 358/140

4099202 Jul 1978 Cavanaugh 358/133

4494144 Jan 1985 Brown 358/133

4688255 Aug 1987 Kahn 381/16

4849811 Jul 1989 Kleinerman 358/133

5164980 Nov 1982 Bush 379/53

by adjusting the auto-switch LM555 timing circuit and was now able to broadcast two pictures per minute instead of one. Video is not embodied in the audio portion at all. Right now the **IBOC** digital AM system requires a channel bandwidth of 30kc and **no video** as of yet!!!

### SUMMARY OF THE INVENTION

The present invention enables the audio and slow scan TV signal to be transmitted over the same 15khz wide channel on the AM broadcast band: again the **Example**; 690khz to 705khz in which the video carrier is at 692khz@bw of 4khz (690khz to 694khz) and the audio carrier at 700khz@bw of 10khz (695 to 705khz). \*Please note 15khz wide at 700khz can also mean 692.5khz to 707.5khz.

For AM video , an AM analog radio with analog tuner can be directly tuned to 692khz or an analog radio **with a** digital tuner, can be then tuned to 690khz for the video, by listening for **the fax like beeps**, before plugging in a slow scan converter into the: earphone; headphone; or headset jack of the AM receiver being used for the video (for FM video, the same can be done with the modified Ramsey FR10 FM receiver ) and by changing the frequency to 700khz, the same analog radio **with a** digital tuner will tune in the audio at 700khz .

A Walkmen style RCA AM/FM stereo cassette player #RP-1872C was used to check the on air frequencies, also used was a Radio shack DMM 22-174B set for HZ/KHZ and a GW-INSTTEK digital frequency counter#GCF-8010H to check the frequency, at R8, in the AM- 1(b) and AM-1 (nbfm) transmitters.

All transmitters used are hobby broadcast quality and all are of the brand name, *Ramsey* . Three AM receivers were used, two for receiving the stereo in the same manor used for receiving the Kahn AM stereo system. Except in the case of the **RAVEN/RVS**, the right channel receiver is tuned right on the frequency, due to the Phase Lock Loop, of the AM-25 transmitter, but the left channel receiver is tuned slightly off to the left of the frequency.

Now the other AM receiver needs the use of a slow scan converter like the Kenwood VC-H1, such as the one in use at the transmitter site, the only difference being the VC-H1 at the transmitter sight is in the auto transmit (once every 3 minutes) mode, which is, **too** slow for commercial broadcast use .A 555 timing circuit was built to cause the auto mode to transmit a new picture every minute, and with **\* live action capture\*** built in by Kenwood, no need to stop the action or pose to send a new picture, furthermore the VC-H1 at the transmitter site will **not** receive when it is in the auto transmit mode, therefore, there will be **no** video interference from other radio stations using the same system.

### BRIEF DESCRIPTION OF THE DRAWINGS AND THE PREFERRED EMBODIMENTS

Fig. 1: Block diagram of the **RAVEN/RVS** broadcast system. Left channel: 400 ns delay line; -45\* phase network (300 Hz to 3 kHz); and a 50us pre-emphasis (a 10 kohm resistor and a .0047uf capacitor).

Right channel: +45\* phase network (300 Hz to 3 kHz); and a 75us pre-emphasis (a 15 kohm resistor and a .0047uf capacitor).

A Ramsey STC-1. Stereo limiter.

A Ramsey AM1 transmitter with a disabled oscillator (C7, Q6 and Q5 have been removed).

The Ramsey AM Pro 25 transmitter with its ANT. OUT going into the RF of the AM 1 transmitter via R10.

Also for the AM Pro 25, another Q9 was added (collector to collector, base to base, and emitter to emitter) in parallel with Q9, both with cooling fins.

Changed R23 variable resistor from 1kohm to 10 kohm and changed R5 from a 1kohm fixed resistor to a 10kohm variable resistor and lastly added a 12 volt cooling fan from an old computer for extra strong cooling; now the top cover no longer fits the AM Pro 25.

A Kenwood VC-H1 inputs into a de-emphasis network that inputs into the AM 1(b)[ or the AM-1(nbfm)] ,in converting the AM-1 to narrowband FM ;one end L1 was disconnected from the collectors of Q3 and Q4 and input into R11 via an installed +10uf electrolytic capacitor. Also a duplicate stage of Q1 was built (another Q1, R2, R3, and C11) to supply voltage to Q3 and Q4 but **no** video is going into the duplicate Q1. Now its output filter network's; L3 is unchanged, but C12 and C14 values have been changed from .0022 uf to .02 uf to obtain the bandwidth of 4khz and that output is then coupled to the main antenna along with the output of the stereo signal from the AM 1-AM 25 transmitter combination,

The power does dip a bit when both **audio and video** transmitter systems operate the **same antenna** array.

Fig. 2 .Phase angles of the signals.

Fig. 3. Ramsey AM-1 schematic used for the AM -1 (b)(nbfm) transmitters.

\*Please note an AM- 1 transmitter can be use in lieu of the AM PRO 25 transmitter but keep in mind a variator needs to be installed in the AM-1s to prevent frequency drifts.

Fig. 4. Ramsey FR-10 schematic used to convert down into the AM band.

RECOMMENDED POWER LEVELS FOR AM STEREO PLUS MINUTE BY  
MINUTE STILL LIFE VIDEOS  
COMMERCIAL BROADCAST U.S. AM RADIO STATIONS

AUDIO

VIDEO

50kw  
25kw  
10kw

5kw

5kw  
2.5kw  
1kw

1kw

500w  
250w  
100w

100w

### Low Power AM Part-73

99w	10w
50w	
35w	
25w	
10w	
5w	
2w	

### Hobby Broadcast AM Part-15

1w	1w
.75w	
.25w	

The video power recommendations are for AM pictures. Antenna height must also be considered for FM pictures ,such as, if the antenna height is 1160 feet then the maximum video power would be anywhere from 3kw to 6kw, for commercial broadcasting.

**RAVEN/RVS**

#### Other References

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RADIO SHACK 2002 CATALOG: a brief description of **RDS** (FM RADIO DATA SERVICE)

INTERNET: SLOW SCAN- TV HISTORY 1970 **W7FEN**: Single Sideband-Suppress Carrier; Lower Sideband Audio; Upper Sideband Video.

INTERNET: COMMERCIAL AM TRANSMITTERS; Articles on Power Side and Cam-D. *Kahn communications* (No schematics).

INTERNET: ADVERTISEMENT; LOW POWER AM PART-73; AM-30P, AM-60P, and AM-100P *LPB, Inc.*

HOBBY BROADCAST AM. PART-15: AM-1 and AM PRO-25, schematic study and kit building *Ramsey electronics*.